REMARKS

Introductory Comments:

Claims 1-20 are pending in the application. The Applicants respectfully request reconsideration of claims 1-20.

In Response To The Claim Objection:

The Applicants have amended claim 7 in accordance with the Examiner's suggestion.

In Response To The Claim Rejections:

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,454,266 (Chevroulet et al.) in view of either U.S. Patent 5,905,203 (Flach et al.) or U.S. Patent 3,226,981 (Mullins et al.) or U.S. Pub. No. 2003/0079543 (Potter).

According to the Office Action, Chevroulet et al. discloses a force measuring device comprising, as illustrated in Figures 1-6, a first fixed plate 3; a second fixed plate 4; a plate 2 connected to a flexible member is disposed between the first and second fixed plates; a first transimpedance amplifier 5 receives a first displacement capacitance signal to generate a first scaled voltage signal; a second transimpedance amplifier 6 receives a second capacitance signal to generate a second scaled voltage signal wherein an acceleration signal is generated from the first and second scaled voltage signals. (See, column 3, line 35 to column 4, line 35). The Office Action recognizes that Chevroulet does not disclose a flexure plate.

According to the Office Action, the references, Flach et al., Mullins et al., Potter, disclose a capacitive acceleration sensor comprising a flexible plate (reference

numeral 21 of Flach et al.; reference numeral 12 of Mullins et al.; reference numeral 26(1) of Potter).

The Applicants submit that it would not have been obvious to combine the Chevroulet, Flach, Mullins, and Potter references to arrive at the present invention. No reason is shown why one of ordinary skill in the art would modify the Chevroulet, Flach, Mullins, and Potter references as the Office Action proposes. The references are not pertinent to the problem of dynamic range of temperature and a granularity sufficient for Inter-Continental Ballistic Missile (ICBM) usage, which is generally considered to be 1 micro g to 20 g's, as claimed by the Applicants. Applicants' design is unique in that it allows this dynamic range of temperature and granularity. The Office Action recognizes that the prior art does not explicitly suggest the system component responding to the flexure plate derivative detector is a thruster, an attitude control device, missile steering nozzle or vane actuator.

The Chevroulet reference is directed to measuring inertial force (Abstract.), as is typical for force measuring systems. More importantly, however, Chevroulet does not disclose or teach a flexure plate device generating two scaled voltage signals as recited in claims 1, 9, and 16. Instead, the Chevroulet system is conventional in that it includes an inflexible "conductive mass or mobile electrode 2" coupled to flexible hinges or an elastic suspension. (Column 3, lines 40-43.) Chevroulet does not disclose or suggest a conductive mass that is itself flexible, as is recited in claims 1-20. The flexure plate is defined such that "all the system flexure is generated within the flexure plate 30." (Paragraph [0029].) Chevroulet does not disclose or suggest an embodiment including a flexible conductive mass or mobile electrode.

Conductive masses are substantially inflexible, and therefore, Chevroulet couples the conductive mass to flexible hinges to generate system flexure. Problems inherent in the Chevroulet design, including device sensitivity limitations, are solved therein using feedback systems. (e.g. column 7, lines 35-55.) These feedback systems are less efficient, both due to power consumption and component costs, than the flexure plate design of claims 1, 9, and 16.

The Potter reference is directed to a conventional accelerometer design including a flexible plate holding a charge in a dielectric layer. (Page 2, paragraph [0025].) Potter, however, does not disclose or teach the use of transimpedance amplifiers or generation of scaled voltage signals as recited in claims 1, 9, and 16. Potter also does not teach or suggest that application of the Potter system would be in any way beneficial to derivative detector acceleration systems as is the claimed system. Instead, Potter teaches generating an acceleration signal as a function of a potential across two electrodes, which is substantially different from generating a charge displacement capacitance signal. (Page 5, paragraph [0047].) It would not, therefore, have been obvious to modify Potter as the Office Action proposes.

The Flach and Mullins references are directed to a mechanical rocker (Flach, column 2, lines 20-22) and a reed having a flex portion (Mullins, Figure 2). More importantly, neither of these references discloses or teaches a flexure plate or transimpedance amplifier as recited in claims 1, 9, and 16. Further, no reason has been shown why it would be obvious to selectively combine these references to produce the claimed invention. Applicants therefore submit that no motivation has been shown to combine the references as proposed.

"Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination." ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1672, 1577, 221 USPQ 929, 933 (Fed.Cir. 1984). Even if all the elements of Applicant's invention are disclosed in various prior art references, the claimed invention taken as a whole cannot be said to be obvious without some reason given in the prior art why one of ordinary skill would have been prompted to combine the teachings of the references to arrive at the claimed invention. Therefore, because no teaching or suggestion is found in any of the references for transimpedance amplifiers receiving charge displacement capacitance signals from a flexure plate configuration, claims 1, 9, and 16 is believed to be allowable.

The structure of the flexible flexure plate described by the Applicants is advantageous in that the flexure plate is minimally susceptible to undesirable capacitance signals due to angular momentum changes in the system, such as those occurring when the system is turning. Whereas, a conductive mass, rocker, or reed designs, such as the ones used in Chevroulet, Mullins, and Flach, are highly susceptible to such angular momentum changes. Further, the robustness of the flexure plate design eliminates the need for the feedback system of Chevroulet.

Claims 1, 9, and 16 are believed to be allowable for at least the aforementioned reasons. Claims 2-8, 10-15, and 17-20 depend from claims 1, 9, and 16 and are also believed to be allowable for at least the aforementioned reasons.

In view of the aforementioned remarks, it is respectfully submitted that all pending claims are in a condition for allowance. A notice of allowability is therefore

respectfully solicited. Please charge any fees required in the filing of this amendment to Deposit Account 50-0476.

The Examiner is invited to contact the undersigned at (248) 223-9500 if any unresolved matters remain.

Respectfully Submitted,

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